

IN THE CLAIMS:

Please amend the claims as follows:

1-23. (Canceled)

24. (Original) An apparatus, comprising a cantilever structure including:
a substrate including a cantilever body that includes a doped layer; and
a vertically aligned nanostructure coupled to the cantilever body.

25. (Original) The apparatus of claim 24, further comprising another vertically aligned nanostructure coupled to the cantilever body.

26. (Original) The apparatus of claim 24, wherein there are no other vertically aligned nanostructures coupled to the cantilever body.

27. (Original) The apparatus of claim 24, wherein the vertically aligned nanostructure is coupled to the cantilever body at a photolithographically defined location.

28. (Original) The apparatus of claim 24, wherein the vertically aligned nanostructure is located toward an end of the cantilever body and substantially on a longitudinal center line of the cantilever body.

29. (Original) The apparatus of claim 24, wherein the vertically aligned nanostructure includes a carbon nanofiber.

30. (Original) The apparatus of claim 24, wherein the vertically aligned nanostructure includes a single wall carbon nanotube.

31. (Original) The apparatus of claim 24, wherein the vertically aligned nanostructure includes a multi-wall carbon nanotube.

32. (Original) The apparatus of claim 24, wherein the vertically aligned nanostructure

includes an expanded base and a substantially cylindrical nanostructure coupled to the expanded base.

33. (Original) The apparatus of claim 24, further comprising a nanostructure deactivating layer that substantially surrounds a portion of the vertically aligned nanostructure.

34. (Original) The apparatus of claim 33, where in the nanostructure deactivating layer includes Si_3N_4 .

35. (Original) The apparatus of claim 24, further comprising an electrically conducting layer coupled between the vertically aligned nanostructure and the doped layer of the cantilever body.

36. (Original) The apparatus of claim 35, wherein the electrically conducting layer includes an electrical interconnect to the vertically aligned nanostructure.

37. (Original) The apparatus of claim 24, wherein the doped layer is degeneratively doped to a metallic state.

38. (Original) The apparatus of claim 24, wherein the vertically aligned nanostructure is hydrophobic.

39. (Original) The apparatus of claim 24, wherein the vertically aligned nanostructure is hydrophilic.

40. (Original) The apparatus of claim 24, wherein a tip region of the vertically aligned nanostructure is chemically modified.

41. (Original) A chemical force microscope tip comprising the apparatus of claim 24.

42. (Original) A chemical force microscope comprising the scanning probe microscope tip of claim 41.

43. (Original) A scanning probe microscope tip comprising the apparatus of claim 24.
44. (Original) A scanning probe microscope comprising the scanning probe microscope tip of claim 43.
45. (Original) A magnetic force microscope tip comprising the apparatus of claim 24.
46. (Original) A magnetic force microscope comprising the scanning probe microscope tip of claim 45.
- 47-70. (Canceled)
71. (Original) An apparatus, comprising a cantilever structure including:
a substrate including a cantilever body; and
a vertically aligned nanostructure coupled to the cantilever body.
72. (Original) The apparatus of claim 71, further comprising another vertically aligned nanostructure coupled to the cantilever body.
73. (Original) The apparatus of claim 71, wherein there are no other vertically aligned nanostructures coupled to the cantilever body.
74. (Original) The apparatus of claim 71, wherein the vertically aligned nanostructure is coupled to the cantilever body at a photolithographically defined location.
75. (Original) The apparatus of claim 71, wherein the vertically aligned nanostructure is located toward an end of the cantilever body and substantially on a longitudinal center line of the cantilever body.
76. (Original) The apparatus of claim 71, wherein the vertically aligned nanostructure includes a carbon nanofiber.
77. (Original) The apparatus of claim 71, wherein the vertically aligned nanostructure

includes a single wall carbon nanotube.

78. (Original) The apparatus of claim 71, wherein the vertically aligned nanostructure includes a multi-wall carbon nanotube.

79. (Original) The apparatus of claim 71, wherein the vertically aligned nanostructure includes an expanded base and a substantially cylindrical nanostructure coupled to the expanded base.

80. (Original) The apparatus of claim 71, further comprising a nanostructure deactivating layer that substantially surrounds a portion of the vertically aligned nanostructure.

81. (Original) The apparatus of claim 80, where in the nanostructure deactivating layer includes Si_3N_4 .

82. (Original) The apparatus of claim 71, further comprising an electrically conducting layer coupled between the vertically aligned nanostructure and the cantilever body.

83. (Original) The apparatus of claim 82, wherein the electrically conducting layer includes an electrical interconnect to the vertically aligned nanostructure.

84. (Original) The apparatus of claim 71, wherein the cantilever body includes an etch stop layer.

85. (Original) The apparatus of claim 71, wherein the cantilever body includes a doped layer.

86. (Original) The apparatus of claim 85, wherein the doped layer is degeneratively doped to a metallic state.

87. (Original) The apparatus of claim 71, wherein the vertically aligned nanostructure is hydrophobic.

88. (Original) The apparatus of claim 71, wherein the vertically aligned nanostructure is hydrophilic.
89. (Original) The apparatus of claim 71, wherein a tip region of the vertically aligned nanostructure is chemically modified.
90. (Original) A chemical force microscope tip comprising the apparatus of claim 71.
91. (Original) A chemical force microscope comprising the scanning probe microscope tip of claim 90.
92. (Original) A scanning probe microscope tip comprising the apparatus of claim 71.
93. (Original) A scanning probe microscope comprising the scanning probe microscope tip of claim 92.
94. (Original) A magnetic force microscope tip comprising the apparatus of claim 71.
95. (Original) A magnetic force microscope comprising the scanning probe microscope tip of claim 94.